



The status of *Cuvierina spoeli* Rampal, 2002 and *Cuvieria oryza* Benson, 1835 (Gastropoda, Pteropoda, Cuvierinidae)

La position de *Cuvierina spoeli* Rampal, 2002 et *Cuvieria oryza* Benson, 1835 (Gastropoda, Pteropoda, Cuvierinidae)

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Abstract

The name *Cuvierina spoeli* Rampal, 2002 cannot be understood as a new replacement name (*nom. nov.*) for *Cuvierina atlantica*, as published in the unavailable name *Cuvierina columnella* (Rang, 1827) f. *atlantica* van der Spoel, 1970. The name *atlantica* was made available as a name of the species group in the combination *Cuvierina columnella atlantica* Bé, MacClintock & Currie, 1972, currently interpreted to represent the species *Cuvierina atlantica*. *Cuvierina spoeli* type material does not belong to *C. atlantica*, but to *C. columnella* of which it therefore is a junior subjective synonym.

The name *Cuvieria oryza* Benson, 1835 was recognised to represent a senior synonym of *Cuvierina urceolaris* (Mörch, 1850), not a junior synonym or form of *C. columnella* Rang, 1827, as it was frequently interpreted by authors. The name *C. oryza* is here declared *nomen oblitum* and the name *C. urceolaris*, because in prevailing usage, is declared *nomen protectum*. The conditions of ICZN (1999, art. 23.9.1.1 and .2) are met.

Key words: Pteropoda, *Cuvieria*, *Cuvierina*, nomenclature, replacement name, synonymy, *nomen oblitum*, *nomen protectum*, Indian Ocean

Le nom *Cuvierina spoeli* Rampal, 2002 ne peut pas être compris comme un nouveau nom de remplacement (*nom. nov.*) pour *Cuvierina atlantica*, tel que publié dans le nom non disponible *Cuvierina columnella* (Rang, 1828) f. *atlantica* van der Spoel, 1970. Le nom *atlantica* a été rendu disponible comme nom du niveau d'espèces dans la combinaison *Cuvierina columnella atlantica* Bé, MacClintock & Currie, 1972, actuellement interprétée comme représentant l'espèce *Cuvierina atlantica*. Le matériel type de *Cuvierina spoeli* n'appartient pas à *C. atlantica*, mais à l'espèce *C. columnella* dont il est donc un synonyme subjectif plus récent.

Le nom de *Cuvieria oryza* Benson, 1835 a été reconnu pour représenter un synonyme plus ancien de *Cuvierina urceolaris* (Mörch, 1850), pas un synonyme plus récent ou une forme de *C. columnella* Rang, 1827 comme il était fréquemment interprété dans la littérature. Le nom de *C. oryza* est ici déclaré d'être *nomen oblitum* et le nom de *C. urceolaris*, parce que dans l'usage prédominant, est déclaré *nomen protectum*. Les conditions de l'ICZN (1999, art. 23.9.1.1 et .2) sont réunies.

Mots clés: Pteropoda, *Cuvieria*, *Cuvierina*, nomenclature, nom de remplacement, synonymie, *nomen oblitum*, *nomen protectum*, Océan Indien

Introduction

Currently living pteropods of the genus *Cuvierina* Boas, 1886, a replacement name for the previously used name *Cuvieria* Rang, 1827, used to be considered as a single species, *C. columnella* (Rang, 1827), for which a worldwide distribution was accepted, mainly in tropical and subtropical parts of all oceans. Although in the course of time several related taxa were described, these were usually interpreted either as synonyms or as formae or subspecies of *C. columnella*.

Also Boas (1886, pp. 132, 214, figs 95a–p) recognised a single species, *Cuvierina columnella* (see Figs. 1A–C herein), under which name he listed, among others, the names *Cuvieria oryza* Benson, 1835 and ‘*Cuvieria urceolaris* Mörch’, 1850 (see Fig. 1–J herein as an example) as synonyms. Within *C. columnella*, Boas distinguished a ‘var. *typica*’ and a ‘var. *urceolaris*’. According to ICZN (1999, Principle of Coordination, article 47.1) Boas’ ‘var. *typica*’ represents the nominotypical subspecies to be indicated as *Cuvierina columnella columnella*. Tesch’s (1913, p. 38, figs 34–35) recognition of Boas’ two varieties as subspecies is in accordance with ICZN (1999, article 45.6.4).

Van der Spoel (1967, p. 79; 1970, p. 120) also recognised a single *Cuvierina* species, but interpreted *urceolaris* as a forma of *C. columnella*. Subsequently, van der Spoel (1970, p. 120, fig. 20) added and described *C. columnella* f. *atlantica* (Figs. 1D–F herein as an example). Having been introduced after 1960 at infrasubspecific rank the name *atlantica* is unavailable under ICZN (1999, articles 15.2 and 45.6.3).

Shortly after, however, the name *Cuvierina columnella atlantica* was used by Bé, MacClintock & Currie (1972, pp. 58–60) who based their concept of the name on the description of van der Spoel, 1970. They also referred (p. 59) to the nominotypical subspecies as *C. columnella columnella*.

The name *atlantica*, published as *Cuvierina columnella atlantica* by Bé et al. (1972) is not available from its original publication by van der Spoel (1970), as ruled by ICZN (1999, article 45.6.3), but has to be considered a nov. subsp. As Bé et al., 1972 did not intend, or even realised, to introduce a new taxon, a name bearing type was not designated, but the specimens they mentioned for their mineralogical study, all from the northern Atlantic Ocean north of 22°N are syntypes. They included the material of van der Spoel (1970) that therefore also represents syntypes. I herewith designate van der Spoel’s unavailable holotype of f. *atlantica* as lectotype of *Cuvierina columnella atlantica* Bé et al., 1972. It is housed in the Natural History Museum of Denmark, Copenhagen (NHMD-228466).

Rampal (2002, p. 212 ff) was the first author to consider both *Cuvierina columnella* and *C. urceolaris* valid species. In addition, she redescribed van der Spoel’s *Cuvierina columnella* f. *atlantica*, and proposed *Cuvierina spoeli* as a new name for this taxon, as unfortunately she was unaware of the nomenclatural consequences of Bé et al. 1972.

Janssen (2005) introduced two additional Recent *Cuvierina* species, *C. cancapae* Janssen, 2005 and *C. pacifica* Janssen, 2005, on the basis of shell-morphological characteristics, which led to a total of five Recent species in the genus. He also demonstrated that measurements of two of these species show clear clustering in two respective groups, which was supposed to offer possibilities for a further taxonomic subdivision. This was the case for *Cuvierina urceolaris* in populations from the Indian and Pacific oceans, and in a similar way also for *C. pacifica*, from the northern and southern Pacific.

For the latter group this was acknowledged by BurrIDGE *et al.* (2015, 2016) who by means of integrative characteristics of shell-morphology, biogeography and DNA sequencing indeed demonstrated a specific status of the (mainly) northern Pacific population so far included in *C. pacifica*, that was introduced as *C. tsudai* BurrIDGE, Janssen & Peijnenburg, 2016. A lack of fresh specimens at the time prevented a similar evaluation of the two *C. urceolaris* populations. Currently therefore six Recent *Cuvierina* species are recognised:

<i>Cuvierina atlantica</i> Bé, MacClintock & Currie, 1972	- Atlantic Ocean
<i>Cuvierina cancapae</i> Janssen, 2005	- central Atlantic Ocean
<i>Cuvierina columnella</i> (Rang, 1827)	- Indian and Pacific oceans
<i>Cuvierina pacifica</i> Janssen, 2005	- southern Pacific Ocean
<i>Cuvierina tsudai</i> BurrIDGE <i>et al.</i> , 2016	- mainly northern Pacific Ocean
<i>Cuvierina urceolaris</i> (Mörch, 1850).	- Indian and Pacific oceans.

The status of *Cuvierina spoeli* Rampal, 2002

Rampal (2002, p. 212) introduced the name *Cuvierina spoeli* for the unavailable (because infrasubspecific) name *C. columnella* f. *atlantica* van der Spoel, 1970, using the following motivation: ‘*Ce nom n’étant pas valide car non conforme au Code international de Nomenclature zoologique (ICZN 1999), ce taxon ne peut être attribué à Spoel en tant qu’espèce. Nous le redécrivons et le nommons Cuvierina spoeli* n. sp.’ [As this name is not valid, because

not conforming to the international Code of Zoological Nomenclature (ICZN 1999) this taxon cannot be attributed to Spoel as a species. We redescribe it and name it *Cuvierina spoeli* n.sp.].

Type locality and type specimens for *Cuvierina spoeli* were given as: ‘Océan Indien sud-occidental, NO Marion Dufresne, 21°08’S, 55°11’E, 630–710 m, holotype L = 9.88 mm, Lm = 2.71 mm (MNHN BIMM); 2 paratypes L = 9.78 mm, L = 9.90 mm (MNHN BIMM)’, in which L = shell height, and Lm = maximum shell width. The holotype, from a sediment sample, is in the collection of the Paris Muséum (MNHN-IM-2000-33848 SEC).

The introduction by Rampal (2002) of the name *Cuvierina spoeli* obviously was meant to establish an available name for the taxonomic species previously denoted by the unavailable name *atlantica*. The wording ‘replacement name’, its French equivalent ‘*nom de remplacement*’ or ‘*nomen novum*’ (ICZN (1999, articles 16, 72) were not used, the name was introduced as ‘**n. sp.**’, and a holotype and two paratypes from the Indian Ocean were designated. The name *spoeli* is not a replacement name, as only an available name can be replaced in the nomenclatural sense (ICZN article 13.1.3) and ‘*forma atlantica* van der Spoel, 1970’ was not available. Unfortunately, Rampal (2002) overlooked the introduction of *Cuvierina columnella atlantica* as a taxon of the species group (ICZN article 45.6.3) by Bé, MacClintock & Currie (1972).

The proposal of the name *Cuvierina spoeli* in Rampal (2002) constitutes the introduction of a new, available species name, with the holotype from Indian Ocean as the name bearing type specimen. This interpretation was followed by Janssen (2005, p. 45), who rejected the status of replacement name for *Cuvierina spoeli* and found that Rampal’s type material does not even represent *C. atlantica* Bé *et al.*, but instead belongs to *C. columnella* Rang. Therefore Janssen (2005) considered *C. spoeli* to be a junior subjective synonym of *C. columnella*.

Rampal (2017, p. 31) recognised Bé *et al.*’s introduction of *C. atlantica* and accepted all six species listed in the present work’s introduction as taxonomically valid, but considered *C. spoeli* to be a synonym of *C. atlantica*. In both of her papers (Rampal, 2002, p. 214; 2017, p. 35) *C. atlantica* was mentioned as occurring mainly in the Atlantic Ocean, but also present in the Indo-Pacific area. Although van der Spoel (1970, p. 118) initially supposed it to be present also in the Indo-Pacific, van der Spoel (1976, p. 49) clearly restricted its occurrence to the Atlantic, which was acknowledged by Janssen (2005) and Burridge *et al.* (2015, 2016).

The size ranges (Rampal, 2017, p. 33) are given as: *Cuvierina columnella* 7.0–8.0 mm and *C. atlantica* 8.5–10.3 mm. These measurements as given in van der Spoel (1970, p. 120) are: *C. columnella* 4.0–8.0 mm and *C. atlantica* 7.0–10.0 mm. Janssen (2005) recorded differing measurements: *C. columnella* 8.5–11.5 mm, *C. atlantica*: 6.5–10 mm.

Rampal’s (2002) type specimens of *C. spoeli* from the Indian Ocean, all three being in the size range of 9–10 mm shell height, did not at all agree with the size range mentioned by van der Spoel (1970) for *C. columnella*, but fitted perfectly van der Spoel’s measurements of f. *atlantica*, which makes Rampal’s decision that the Indian Ocean specimens were identical with f. *atlantica* understandable. Other characteristics (absence/presence of microornament, H/W-ratio and/or position of strongest inflation), however, were not discussed.

The surprising differences in shell measurements appear to be caused by incorrect interpretation of the shell height of *Cuvierina columnella*. Mrs Rampal (pers. comm., 18.11.2017) stated that the illustrated type specimen of *C. columnella* in Rang (1827, pl. 45, figs 1–3) has an actual shell height of 4.9 mm, reasonably well agreeing with van der Spoel’s minimum size of 4.0 mm. In Rang’s description (p. 323), however, the shell height for this species is given as ‘0.011’, without mention of the measurement unit. Next to Rang’s fig. 3 a vertical bar is printed that in the original publication has a length of approximately 10 mm. The enlarged drawing of the shell on that plate has a height of 49 mm. In the interpretation of shell height therefore Mrs Rampal had considered the bar to represent a 1 mm scale, but this does not explain the meaning of Rang’s ‘0.011’. The bar length apparently does not represent a scale of 1 mm, but contrarily indicates actual shell height, which almost perfectly explains the ‘0.011’ as being the size in metres, or 11 mm.

Rang’s method is even more evident when looking at the size given in the original publication of *Creseis acicula* (Rang, 1828). If the bar length (12.5 mm) given for that species would indeed represent 1 mm, the actual shell size would be 2 mm, whereas Rang’s description mentions a size of ‘0.012’. Also in that case, a shell height of 12 mm is realistic and it is clear that the bar does not represent a 1 mm scale, but again actual shell height. This explains, more or less, the given size indications for *Cuvierina columnella*.

It is evident that *Cuvierina columnella* is the larger of the two species of this genus occurring in the Indian Ocean, the smaller species being *C. urceolaris*. Both species are characterised by the possession of longitudinal

microornamentation, absent in *C. atlantica*. The neotype of *C. columnella* designated in Janssen (2005; Figs. 1A–C herein) demonstrates these differences convincingly. It must be concluded that earlier authors considered the later described species *C. pacifica* Janssen, 2005 and/or *C. tsudai* Burridge *et al.*, 2016, both smaller (6.6–8.5 mm) than *C. columnella* and without microornamentation, to represent *C. columnella*. The large and smooth *C. atlantica* does not occur in the Indo-Pacific, but is restricted to the Atlantic. Also it must be concluded that the species *C. columnella* is absent from the Atlantic realm, including the Mediterranean and the Caribbean. It might, however, easily be confused with *C. cancapae* Janssen, 2005, that reaches a shell height of approximately 7.5–9.5 mm and also has microornamentation.

In the molecular analyses of Corse *et al.* (2013, p. 5, tab. 1) a specimen of ‘*C. spoeli*’ (interpreted to be a synonym of *C. atlantica* in Rampal, 2017) was used from the Indian Ocean (Mozambique Channel, GenBank KC774108) and of ‘*C. columnella*’ from the Caribbean Sea (Yucatan/Belize, GenBank KC774070). As both these species do not occur in the mentioned areas I supposed that KC 774108 belongs to *Cuvierina columnella* and KC774070 to *C. atlantica*. Alice K. Burridge (pers. comm., February 2018) checked these two GenBank data against her own sequences (Burridge *et al.*, 2015) and could acknowledge these reidentifications.

Conclusion: *Cuvierina spoeli* Rampal was proposed as a new species name, rather than as a replacement name. As the type material belongs to *Cuvierina columnella* Rang, the name *C. spoeli* is a junior subjective synonym of *C. columnella*, contrary to Rampal (2017) and WoRMS (Bouchet, 2013). In WoRMS it is stated for *C. spoeli* that ‘Nomenclature [was] based in part on *Cuvierina columnella* forma *atlantica* van der Spoel, 1970’. This may only be true for some of the additional specimens mentioned by Rampal (2002). The type series belongs to *C. columnella*.

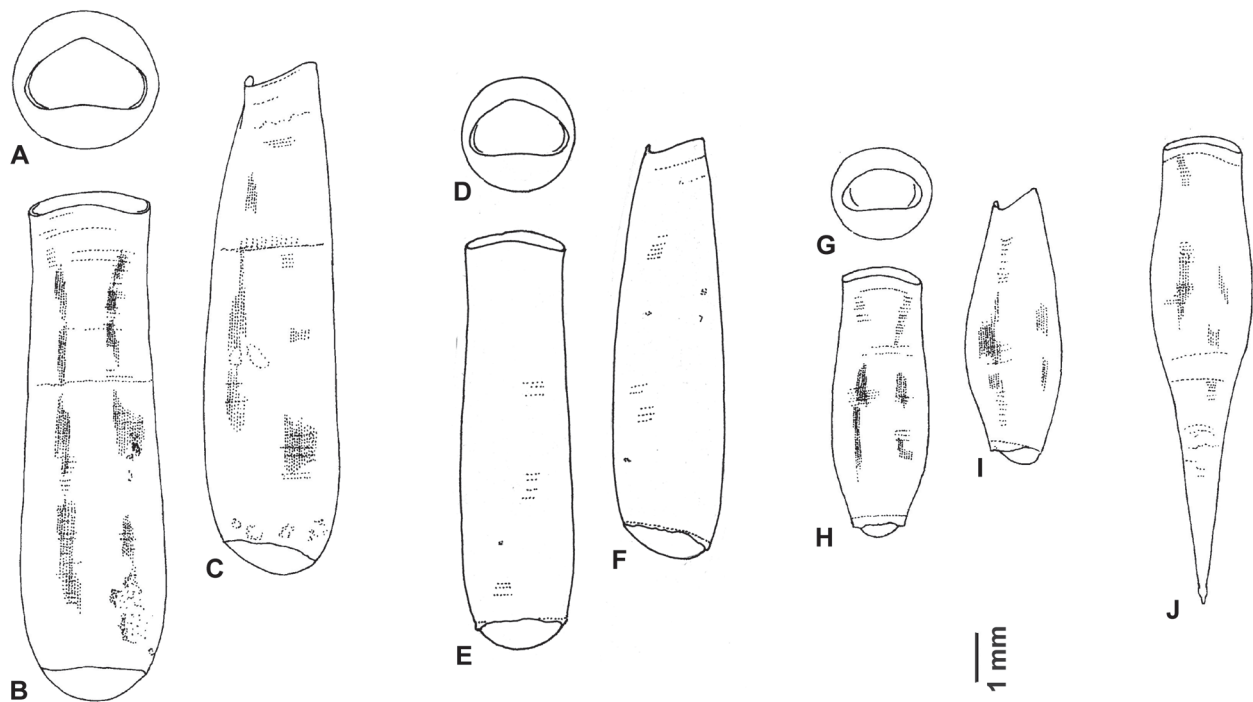


FIGURE 1. Species of *Cuvierina*. **A–C:** *C. columnella* (Rang, 1827), neotype, Marion Dufresne Expedition, 21°08'7"S 55°11'8"E, sample MD32 (from sediment sample). Coll. Muséum National d'Histoire Naturelle, Paris, MNHN-IM-2000-33848 SEC. **D–F:** *Cuvierina atlantica* Bé, MacClintock & Currie, 1972. Tydeman Canary Islands Expedition CANCAP-II, st. 2.078, Canary Islands, S of Fuerteventura, Punta de Jandia, 28°01'N 14°26'W, depth 790 m, van Veen grab, 30-viii-1977. Coll. Naturalis Biodiversity Center, Leiden RMNH 78389). **G–I:** *C. urceolaris* (Mörch, 1850), Dana Expedition, St. 3948(i), 10°11'S 41°57'E, 6-i-1930. Coll. Natural History Museum of Denmark (Zoology), Copenhagen, NHMD-207188. **J:** *C. urceolaris* (Mörch, 1850) retaining larval shell, Dana Expedition, St. 3934(iv, ix, xiv, xix), 11°24'S 50° 05'E, 300 mw, 20/21-xii-1929. Coll. Natural History Museum of Denmark (Zoology), Copenhagen, NHMD-2071913.

A, D, G: apertural views, B, E, H, J: ventral views, C, F, I: left lateral views. After Janssen (2005).

Note: when drawing these specimens (Wild M5 binoculars with *camera lucida* device) the microornamentation is only observed (magnification 25 x) where light reflects on the shell's surface. In these figures that feature is only schematically indicated. In Figs. D–F microornament is absent.

Benson (1835a, p. 176) reported on a number of pteropods ‘taken on board the Ship Malcolm’ in the southern Atlantic and Indian oceans. Among those the author mentioned the catch of two species of ‘*Cuvieria*’. Benson wrote: ‘Our capture of two perfect specimens of this shell will enable me to correct the character given by Rang, from imperfect specimens. Out of the number caught by us we took only two perfect specimens, one of which I unfortunately broke, its excessive fragility reducing it to the state in which Rang has described it’.

In the same volume of the Journal of the Asiatic Society of Bengal, Benson (1835b, p. 698) made clear that with ‘perfect specimens’ he meant shells still possessing their initial portion, the larval shell with protoconch (see Fig. 1J herein as an example), that usually is shed in adult specimens, in which the basal opening is closed subsequent to shedding by a convex calcareous septum. Benson (1835b) described such still complete specimens and ‘corrected’ (rather: completed) Rang’s (1827) description. The same initial shell part, however, had already been described and illustrated by d’Orbigny (1834, p. 126; 1835, pl. 8, fig. 36) under the (misspelled) name *Cuvieria* ‘*columella*’.

In his material Benson recognised two species, and identified the one with larger shells as *C. columnella* Rang, 1827. For the smaller shelled species Benson (1835b) introduced the name *Cuvieria oryza*, describing it as ‘being about half the length of the other, and in being somewhat more depressed, and more ventricose laterally’, and in a Latin diagnosis as ‘*Testâ laevi, intidâ* [probably a printer’s error for *nitidâ*], *depresso-cylindrica, lateribus versus septum ventricosioribus; apice elongato, peracuto* [Shell smooth, [shiny], depressed cylindrical, more ventricose towards the septum, apical part elongate, strongly pointed]. Length 4/10 of an inch, of which the spire occupies nearly one-half’. The type locality is the tropical Indian Ocean between 8°6' S and 5°0' N, 86°38' and 91°0' E. The given height of the shell (4/10 of an inch = 10.16 mm) concerns the specimen still possessing the juvenile portion with protoconch. This means that specimens in which that shell part is shed (as it usually is) measure about 5–6 mm in shell height. Benson (1835b) compared such specimens in their ordinary mutilated state with ‘a grain of rice’, which also explains the choice of the name *oryza* he gave to the species.

Two species of the genus *Cuvierina* are currently accepted to occur in the Indian Ocean, namely *Cuvierina columnella* (Rang, 1827) and *C. urceolaris* (Mörch, 1850). Comparing the measurement of Benson’s *C. oryza* with those given by Janssen (2005, figs. 30–31) shows that the *C. oryza* measurement agrees with *C. urceolaris*, but not at all with *C. columnella*. Also, as described, the ventricose shape of the shell points to *C. urceolaris* (compare Fig. 1G–J).

Conclusion: *Cuvieria oryza* Benson, 1835 is neither a synonym nor a forma/variety of *C. columnella* as accepted by previous authors, but contrarily is a senior synonym of *C. urceolaris* (Mörch, 1850) and therefore should be given priority over the latter, younger name.

In accordance with ICZN (1999, art. 23.9.2), the junior *Cuvieria urceolaris* is herewith declared valid and *nomen protectum*, because in prevailing usage, whereas the senior *Cuvieria oryza* is declared *nomen oblitum*. The conditions for this act as ruled in ICZN (1999, articles 23.9.1.1 and .2) are met: the name *C. oryza* has not, to my knowledge, been used as a valid name after 1899, and the name *urceolaris* has been used as valid in 25 works, published by more than 10 authors in the immediately preceding 50 years (= 1967–2017), encompassing a span of more than 10 years (in chronological order): Van der Spoel, 1967, p. 81; Van der Spoel, 1970, p. 120; Bé *et al.*, 1972, p. 49; Rampal, 1975, p. 241; Van der Spoel, 1976, p. 191; Almogi-Labin & Reiss, 1977, pp. 11, 12; Alessandro & Robba, 1981, p. 645; Bernasconi & Robba, 1982, p. 217, 219; Shibata, 1986, p. 124; Kotaka, 1986, p. 124; Ujihara *et al.*, 1990, p. 316; Zorn, 1991, p. 134; Janssen, 1999, p. 114; Higo *et al.*, 1999, nr G4970; Okutani, 2000, p. 775; Rampal, 2002, p. 212; Janssen, 2005, p. 55; Noseworthy *et al.*, 2007, p. 88; Janssen, 2007, p. 74; Poppe, 2010, p. 154; Janssen, 2012, p. 327; Corse *et al.*, 2013, tab. 1, fig. 5; BurrIDGE *et al.*, 2015, p. 2ff; BurrIDGE *et al.*, 2016, p. 2ff; Checa *et al.*, 2016, p. 2ff; Okutani, 2017, p. 1097.

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